

# COMPUTER-IMPLEMENTED ADAPTIVE MODULUAR RISK MANAGEMENT TRADING SYSTEM FOR PROFESSIONAL EQUITY TRADERS

## DESCRIPTION

### **[Para 1]** BACKGROUND

**[Para 2]** This application fully incorporates technical, intellectual property, and marketing materials related to CYBERTRADER®, currently licensed to Schwab and its subsidiaries. These materials are incorporated herein for all purposes. This application incorporates all the features of an experimental stock trading program called STOCKO, developed by Dr. Robert Levinson of Santa Cruz, CA, which is taught in US Provisional Application 60/513,938, and filed October 23, 2003, which is incorporated by reference herein for all purposes, pursuant to the extent of the applicable law under 35 USC 1 et. seq. Information regarding the STOCKO platform has also been made available to the public through several Internet sites since 1997, including [www.clearstation.com](http://www.clearstation.com), [www.i.exchange.com](http://www.i.exchange.com), [www.stockscience.com](http://www.stockscience.com) and [www.drstocko.com](http://www.drstocko.com), all of which are fully incorporated by reference, for all purposes.

### **[Para 3]** SUMMARY

**[Para 4]** The present invention provides the Cybertrader (CT) user the ability to offer their active trader clients a trading system which would scientifically reduce their risk, while simultaneously increase their trading volume. The present invention provides an advantage to an implementing entity because in the electronic brokerage industry, the real fight among competitors is over the tiny percentage of active traders who trade huge volumes of stocks on a daily basis and who generate significantly in excess of 50% of any given firm's trading volume.

### **[Para 5]** DISCLOSURE

**[Para 6]** The present invention takes advantage of some assumptions that vary from embodiment to embodiment. For example, the market is not obligated to behave as it has in the past: some consequences of this on that even the best systems will probably stop working at some point and will probably only be profitable in the certain environments. With added complexity in adaptive system should be able to remain profitable.

**[Para 7]** 3. In an extreme result of Assumption number two is that the market may, at times, exhibit quote inside pattern" or pattern cancellation behavior so that it appears to purposely break and or punish past useful patterns beyond what a purely random market might do.

**[Para 8]** 4. Given proper normalization in a canonization of past data, all securities in all-time frames exhibit behavior that is useful in helping to be date a future price movement had given time. For example IBM's trading day tomorrow may resemble

the any at index 255 days ago, especially if it's from analogy can be established between their current and underlying technical environments.

**[Para 9]** 5. Despite these similarities after normalization eight security are index may Onset exhibit characteristics and resonance that are essentially their own and signature.

**[Para 10]** 6. In market forecasting system must be complex enough to model a large and its of technical training strategies at varying time frames in order to simulate the habits of populations of traders that follow, or appear to follow the strategies.

**[Para 11]** 7. Given the security certain forecasting strategies will have to be approved to be more useful than others at predicting a recent stock behavior.

**[Para 12]** 8. a stock forecasting strategy can never be very bad since it's very badness can be exploded by trading and contrary to it. The only useless feature is the forecasts are those that are essentially random. However perversely some features may manage to change their success as soon as they're exploited. Clearly it is these features that must be ignored or of avoided or exploded when properly recognized.

**[Para 13]** 9. Combine those assumptions. Forecast in the developed as a function of: A. the past price behavior of the stock, B. it's past price behaviors, and relationship to other securities in similar scenarios C. the relative success of various features at predicting correctly are incorrectly recent price behavior. These features may come from traditional technical analysis box General and cast their eight, time series analysis another healing or computer design features and expertise modules as live has features and over fitting in the avoided, adding features to the system should improve performance and along one was the system becomes adept at using such features. Additional aim the revenue often success as insiders are the individual features features the South may be needed as securities for which forecasts become element possibly at a meta-level.

**[Para 14]** 10. The metropolis simulated any Lena strategy of heating up a system that is doing poorly and cooling a system that is doing allows a good idea is and a man in his should keep systems out of ruts created by any particular feature behavior

**[Para 15]** 11. Such forecasts 10 further earn me combine to develop into risk minimize portfolios I analyzing correlations between I know this features and justifications for trades in the portfolio and creating various hedges. For example long -- Amzn and short YHOO.

**[Para 16]** The brokerage industry to know that the frequency of the forecasts needed to be changed. A single forecast for each day might possibly not generate enough added trading volume to make our product attractive to the brokers. The strategy developed was to license the product to major re-distributors such as Charles Schwab, other large electronic brokerage firms, E-Signal, and other large vendors of raw price data for them to, in turn, provide the inventive product to their client base and pay

accordingly. It was commonly thought the product would best be licensed by simply creating a website and charging users on a "per hit" basis. The real monetary reward was to come from the re-distributors as they saw the as first as a competitive advantage and later as a "must have" item to match the competition.

**[Para 17]** The ultimate goal being possibly a real time forecast feed. The ability to increase the frequency of predictions is directly related to the inclusion of the "decision factors" of choosing. Prior to the inclusion of these "real time" factors, the (prior art version) of the system was more reactive than pro-active. The goal immediately became to make the brokerage firms' clients more profitable (or less unprofitable) and to stimulate trading activity. That was the reason so many changes and additions were required to both the inputs, outputs and timing thereof. Instead of simply producing Buy, Sell, Hold recommendations, the invention uses **actual dollar prices**. The invention then moved to forecasting a specific price movement for each stock, complete with direction of movement, magnitude of movement (both in % and in dollars), and confidence of movement.

**[Para 18]** This feature allowed a trader to, for example, see a stock with a predicted dollar price change of 75 cents, see the percentage change that that dollar price change would equate to, AND also see a confidence level of, for instance, of 8, on a scale 1-10. This was a very exciting development to day traders, several of whom were met with at CyberTrader's headquarters in Austin, Texas. Their feeling was that they could make sufficient profit by trading only those stocks with the highest confidence level.

**[Para 19]** The output ranked the stocks by confidence level, both on the buy side and on the sell side. In addition to the price movement forecasts, we also began publishing scientifically generated stop loss and take profit levels. This was a huge improvement over the rather casual and unscientific techniques employed by most day traders up unto that time. From the brokerage firm's perspective, this was a great enhancement in that it increased the odds of their clients remaining solvent, thereby increasing the life and activity of the account. Our stop loss and take profit levels were also adjustable to accommodate the particular client's risk preference. There is provided more detail on this feature and its value in the original document. These enhancement of the outputs was a major advance for marketing the invention.

**[Para 20]** The applicants have created a unique system for not paramount take multifactor financial Times series modeling. The invention in one embodiment is an environment for managing predictive models in the present invention.

**[Para 21]** BRIEF DESCRIPTION OF THE DRAWINGS

**[Para 22]** FIG. 1 illustrates the basic interactive components of the predictive advisors;

**[Para 23]** FIG. 2 illustrates sample data flow in a simplified embodiment;

**[Para 24]** FIG. 3 illustrates a sample data flow and functional in the present invention;

**[Para 25]** FIG. 4 is an architectural implementation of the of the invention as it may be implemented on Cybertrader®;

**[Para 26]** FIG. 5 is a flow diagram of the operation selection;

**[Para 27]** FIG. 6 is an alternate view of the data flow in a preferred embodiment of the invention;

**[Para 28]** FIG. 7 is an illustration of the factor adjustment system;

**[Para 29]** FIG. 8 is a screen shot of an implementation of the present invention;

**[Para 30]** FIG. 9 shows the set up of the stop loss risk control trading system;

**[Para 31]** FIG. 10 shows the risk control trading system with the data flow in an override;

**[Para 32]** FIG. 11 is a sample list of operators;

**[Para 33]** FIG. 12 is a sample list of Bayesian logic modules or base advisors B-AD;

**[Para 34]** FIG. 13 shows some descriptions for selection of initial data arrays or factors and related notes.

#### **[Para 35]** DETAILED DESCRIPTION

**[Para 36]** Referring now to FIG. 1, a functional diagram of the present invention in a particular embodiment is shown. The implementation of the invention is often on an end-user's back-end software application, which is generally their own proprietary software or a modified off-the-shelf solution.

**[Para 37]** The data is moved from the proprietary software backend to base-level prediction system connected seriously **base level advisers**. Although only six advisers are shown in the diagram, as can be appreciated by those skilled in the art, different types and configurations of advisers at the baselevel can be included in different environments of the invention.

**[Para 38]** In a preferred embodiment, due to the fact that active traders require as much "executable" information at their fingertips as possible, an embodiment of the invention operates in its own window on the CT Windows-based platform. This allows the trader to always have immediate access to the most current forecasts for their stocks of interest, and could execute immediately from the same screen.

**[Para 39]** In another embodiment for high wealth but less active clients, the invention allows transmission for end-of-day forecasts along with the account summary sent out to Schwab's clients nightly. This would allow the investors to review their holdings nightly (as about 85% of individual investors do, according to several studies), make decisions about their actions for the next day, based in part on our forecasts for their specific holdings, and input trade orders that night, to be executed

at the open of the market the next day. They would also have the ability to require a specific price for their orders, if they preferred a limit order to a market order.

**[Para 40]** The present invention may include several sophisticated techniques and features which addressed the active trader market specifically and increased the likelihood of their extended viability by increasing their profitability and reducing their risk.

**[Para 41]** Other embodiments of the present invention include a risk profile adjustment feature which would allow the user to determine their own **risk profile**. In a preferred embodiment, there would be three categories of risk: Low, Medium and High, but other types of organization could also be used. Each level would have an automatically triggered stop-loss or take-profit associated with it. For example, a High risk profile client would set their take-profit trigger at 100% of our predicted magnitude and set their stop-loss trigger at, for instance a decline of 50% of our predicted movement. A Medium risk profile would take profit at 75% of our forecast move and their stop-loss at a decline of 30% of our forecast. A Low-risk profile would, in a typical scenario, set an end-user's **take profit** level at 50% of our forecast and the stop-loss at a 15% decline point. In addition to the pre-set profiles, each brokerage firm could choose to let their set their specific levels, outside of the "canned" versions. All of these levels could be accompanied by "rolling" stop-losses and take profits which would move up or down in accordance with the price movement of the particular stock. In other words, the user could determine to take no profit at our forecasted level, expecting the stock to move even further (up or down). Simultaneously, the stop loss levels would move upward or downward in proportion to the actual price movement. This feature, which is often called, "tightening the stops," and is currently available, but has not been available in conjunction with the scientifically generated suggested take profit or stop loss of particular embodiments of the present invention.

**[Para 42]** In order to generate as many trading opportunities for CT's clients as possible, the present invention incorporates increasing the frequency of our forecasts. The original STOCKO only published "Buy", "Sell", or "Hold" recommendations for the next day's close. These forecasts were generated from the OHLC ("Open", "High", "Low", "Close") data from the day just ended. Increase the frequency of the forecasts, ultimately to approach real-time forecasts and limited only by band width and processing power. Secondly, instead of implementing a simple Buy, Sell, Hold forecast, the present invention recommends an actual dollar price.

**[Para 43]** The present invention also calculates and displays confidence levels relating to the **confidence in the direction of price movement**, but also anticipates not the magnitude. The next embodiment of the invention agreed to start implementing with magnitude confidence levels.

**[Para 44]** One of the key factors in successfully implementing the present invention is the selection of the data to analyze and selecting the correct manipulation of that data. Initially, it is useful to consider the concept of the data components of **factors, operators, advisors**, and overlay advisors, or **meta-advisors** as they are implemented in the present invention.

**[Para 45]** ComponentClass            Functional

**[Para 46]** Factor: Array (Numerical Data, Correlation) :The first component of a factors may be a stock price or collection of data.

**[Para 47]** Operator: Mathematical or logical function, transforms a factor into recognizable data.

**[Para 48]** Base-Advisors Bayesian Logic Modules; determines inclusion or exclusion of transformed data for an number of circumstances.

**[Para 49]** Meta-Advisor: Set/Fuzzy Logic with adjustable parameters; analyzes multiple base advisors

**[Para 50]**        Risk Management Override    Boolean The override is a monitor that continually assess market conditions and will generate a stop loss/take profit instruction when needed.

**[Para 51]** Choosing from a large number of more specifically targeted inputs to populate the **parameters** which include the factors and the set of operators that will be used. The major obstacle was that there literally tens of thousands of possible candidates for inclusion in the model.

**[Para 52]** The present inventions obtain a complete global data set for research. The initial data set was chosen from those data items the ones best suited for the general stock forecasting needs, as opposed to being limited to mutual funds or other items. The development of the invention called for analyzing and making forecasts for a basket of 50 stocks. The inputs most closely correlated to the expected **price movement** of the basket stocks. These inputs consisted of other stocks in the same industry as some of our target stocks, market indices, sector indices (such as SOX) certain commodity prices and fixed income futures prices.

**[Para 53]** For example, as may be appreciated by those skilled in the art, interest rates, and interest expectations, drive all financial markets. Therefore there must be a **connection to interest rates** included among the factors. They also "lead" the markets temporally, thus acting as an "early warning" or leading indicator of market moves that are about to occur. Certain interest rate securities or derivatives reflect the current demand for borrowing and the relationship of that demand to the currently available supply of money for lending. Other interest rate securities and derivatives are more useful in determining the market participants' expectations of interest rate movement, and the possible magnitude of that movement, in the future.

**[Para 54]** Stoploss/profit recommendations a lot outclassed America to be provided with meaningful recommendations as there may be functionally dynamically generated information it. Specifically to each of the current market environments. Stoploss and take profit levels are not a fixed distance from the recommended price and tree but dynamically adjusted with each new prediction, sometimes with a particular relationship (positive correlation) to the current price, sometimes another (such as a negative correlation).

**[Para 55]** The customer is passively presented with a scientifically calculated stoploss and take profit waits a canned choice to accept are not savvy trader users can. The present invention allows customers to automatically load the alert function based upon the stoploss and/or take profit recommendations. These recommendations can be teamed or adjusted to meet specific savvy trader objectives as well as other platforms for example the take profit recommendations been a more conservative, to help ensure that read to customers cash or profit more frequently pay additional ain't

**[Para 56]** Additional customers will be able to see at a glance predicted that is that are most important e.g. it does it affect the securities that they all our are contracted for considering tree that are no indicators or operators to understand. In general factors are selected for inclusion in particular applications and generally consist of financial instruments that the is there as determined have a relationship directly and indirectly to the price action of the instruments the way is you wish is to trade our hat these relationships may be measured as either negative or positive correlations which may make up the optional third part of the awry. The objective is teasing on if system to process time series data far any of said that man's self-serve as a leading or lagging indicator. Any valid relationships and appendices include those that are not here will be detected in use by the system to learning mechanisms contributing to the accuracy of each prediction task.

**[Para 57]** The present invention has the ability to allow a trader to "auto-populate" the trade execution screen based on forecasts.

**[Para 58]** The real time input required for the "stock market specific" version of the product incorporates many other asset classes, as the futures and even options that are at the root of the markets make the best indicators of change for the project. The invention also includes the novel presentation or view of the product as a redirection engine that incorporates real time input and is capable, with different sets of input information, of price and direction, buy, sell, hold, and confidence in a great many asset classes including but

**[Para 59]** As can be appreciated by those skilled in the art, the invention is not limited to foreign exchange, fixed income, futures and options.

**[Para 60]** The applicant invention in place intelligent two-tier based agents also referred to as advisors to capture and model dynamic changes in information at run time. Technical Analysis: This rule assumes that stock prices are not random walks

and that past trading behavior will provide enough information for future price behavior.

**[Para 61]** The invention may include a **super adviser** which is an integral part of the system architecture meta- adviser or high-level adviser or has a contrary adviser which always bets against it. Forget is not at a given time these adviser is a five to be more or less relevant to future prediction is.

**[Para 62]** Overlay advisors include the surprise overlay adviser which annihilate the difference between actual close in predicted close. Momentum overlay adviser which reading this the total change in the last ATL day's, and analysis prediction in overlay adviser which reading the signals from mid-level pattern analysis advisors to approximate the population is a trader is correlated with fouling and or fading them. Buying Pressure Overlay Advisor proprietary Spectrum indicator that adjust for trading versus chomping movements. PIVOT point overlay adviser proprietary daytrading system related to distance from three Day pivot points. The balance overlay adviser estimated bulls estimated bears as to turn the from review of pattern analysis routine is.

**[Para 63]** The base advisors B-AD are generally a collection of machine learning systems and can be implemented for other applications outside of financial market theories. The adviser is process specified factors indicators and trading systems that are reflective of specialized criteria of the present application. All of the advisors is review raw times series data with the base advisors also reviewing the output of the indicators processed raw data the opinions of each of the adviser is our reviewed in combine the super adviser using machine learning for what is termed in the present invention as a consensus. Resulting predictions are compared against actual price activity and advisors are rewarded are punished according to the accuracy of the contribution to the consensus.

**[Para 64]** Another example is the nearest neighbor adviser which fineness the historical precedent which best matches the current situation and reason my analogy with that situation in to make the decision The **Decision tree adviser**: the present invention uses the decision tree which explains 90% of past price movement as a function of the operators. Across the decision tree represents patterns that predict the past. In the security the decision tree adviser uses the current decision tree to make its forecast for that security. The **Joe Adviser** is a daytrading system developed by Joe D. Napoli in the book trading with the within "Dinapoli" levels. The **FIBO adviser** is a system that combine this a neural net with a traditional Fibonacci retracement analysis. The **Equity trading adviser** equity daytrading is a study that uses all current coated indicate years with a proprietary scoring system. **Mutual fund trading adviser** to proprietary mutual fund daytrading system



**[Para 65]** Each of the base-level advisors B-AD, is part of a reward and punishment system. In this context as described above rewarded and punished are terms that are indicative of the importance the advisors are given subsequently.

**[Para 66]** In FIG. 2, four representative insertion points show how the invention works with proprietary software unrelated to the present invention. The insertion points are critical in that they provide the “engine” described above with the fuel to allow effective predictions and loss prevention. Six sample advisors are shown in FIGS. 1 and 3, but as described below and shown in FIG. 11 many other types of advisers can be implemented.

**[Para 67]** Referring now to FIG. 5, a sample system for adjusting the operators or indicators is shown. The operators are generally mathematical and/or logical functions that transform the array data or factor data. Stored pre-defined or *ad hoc* selection of operators may be dependent of the class of the asset, but may also be chosen based on other factors, such as market conditions, etc. The pool of operators may be expanded as is partially listed in FIG.10.

**[Para 68]** Referring now to FIG. 6, a sample data flow of the invention is an alternate form is shown.

**[Para 69]** Referring now to FIG. 7, a factor or initial data array use an adjustment system is shown. Factors are selected for inclusion in a particular application and may include financial instruments that the inventor and/or machine learning have chosen to determine to have a relationship to the desired output recommendations or predictions. The relationships may be adjusted over time as positive or negative correlations to the desired output. The selection of these data arrays for particular applications is critical for the success or failure of particular embodiments of the invention as is discussed below and shown in FIG. 12, as well as the materials included in Appendix A.,

**[Para 70]** Referring now to FIG. 8, a sample output series of display screens is shown, although the invention is not limited to any particular type of output, these screenshots illustrate some of the relevant features. For example, in many embodiments the confidence statistic or results in this an important part of the commercial desirability. Confidence can be measured along several different lines as having described below.

**[Para 71]** The present invention in a preferred embodiment, includes several types of confidence level output which is shown in FIG. 8. For example, Confidence level-A is a Normalized Scale from 1-10 that indicates the predicted of a movement of a commodity and/or equity. Another type of confidence level-M, which is confidence in the change of the magnitude is also normalized on a Scale 1-10 (but not shown in FIG. 8)

**[Para 72]** The present invention takes advantage of numerous techniques and features which would lead to significantly increased trading volume in order to benefit

the brokerage firms by giving them a competitive advantage within the active trader community. For example, writing it specifically for the stock market would omit such markets as Foreign Exchange, Fixed Income, Futures, Options and other asset classes, all of which lend themselves to the powerful analytical capabilities of the base invention. The invention would provide many advantages to target markets by implementing the real-time capability as non-asset specific. Every asset class has its own set of technical indicators and inputs similar to the stock market.

Below is shown sample data output (not related to FIG. 8) that shows the operational features of the present invention. Those skilled in the art will appreciate that this data is representative of some of the capacities of the present invention but should in no way be limited to the data represented below.

**[Para 73]** OUTPUT 1

**[Para 74]** "Ordered Trades (long and short):"

**[Para 75]** ((NVDA -0.59 0.58055854 10) (BBH -2.3899999 1.5906973 10) (DCGN -0.28 0.48265606 10) (IWM -0.9 1.3383011 10) (MER -0.7 0.7508018 10) (DELL -0.53 0.51756924 10) (IBM -0.64 0.9412986 10) (RJR 0.68 0.7078549 10) (ET -0.26999998 0.2892276 10) (EBAY -1.38 1.1716574 8) (EK 0.31 0.5306482 7) (DIA -0.65 0.71167386 5) (CSCO -0.35 0.52063775 5) (PMCS -0.42999998 0.64616877 4) (EMC 0.29 0.28052995 4) (NT -0.22 0.27010044 3) (JNJ -0.42999998 0.46970314 3) (GS -1.25 1.2996379 3) (MO -0.34 0.5604123 3) (LUV -0.21 0.30833358 3) (AMTD 0.35999998 0.42054433 3) (TRAD -0.14 0.26685566 3) (IVGN -1.02 1.2453798 3) (MACR -0.29999998 0.49272728 2) (ORCL -0.19 0.22886491 2) (RFMD -0.17 0.3745882 2) (AMZN -1.29 1.235272 2) (GE 0.21 0.3864143 2) (MSFT -0.24 0.27343392 2) (EWJ 0.08 0.12692635 2) (GM 0.48999998 0.6990766 2) (SPY -0.96 0.79854697 2) (QQQ -0.64 0.41694745 2) (MWD -0.61 0.82731616 2) (BAC 0.68 0.6573803 2) (AXP 0.32999998 0.5093239 2) (WMT 0.59 0.67492133 2) (PFE -0.28 0.4087835 1) (SLR 0.17999999 0.21089374 1) (INTC -0.38 0.55482894 1) (BRCM 1.0 1.0360907 1) (MMM -0.82 1.0477368 1) (AMGN -0.84999996 0.85093194 1) (AGRA 0.089999996 0.1353456 1) (JDSU -0.08 0.15793625 1) (AMR 0.44 0.4752189 1) (F -0.19999999 0.3006487 1) (RIMM 2.11 3.1781144 1) (LU 0.099999994 0.12505732 1) (JNPR -0.71999997 0.97768885 1))

**[Para 76]** "Long Trades:"

**[Para 77]** ((RJR 0.68 0.7078549 10) (EK 0.31 0.5306482 7) (EMC 0.29 0.28052995 4) (AMTD 0.35999998 0.42054433 3) (GE 0.21 0.3864143 2) (EWJ 0.08 0.12692635 2) (GM 0.48999998 0.6990766 2) (BAC 0.68 0.6573803 2) (AXP 0.32999998 0.5093239 2) (WMT 0.59 0.67492133 2) (SLR 0.17999999 0.21089374 1) (BRCM 1.0 1.0360907 1) (AGRA 0.089999996 0.1353456 1) (AMR 0.44 0.4752189 1) (RIMM 2.11 3.1781144 1) (LU 0.099999994 0.12505732 1))

**[Para 78]** "Short Trades:"

**[Para 79]** ((NVDA -0.59 0.58055854 10) (BBH -2.3899999 1.5906973 10) (DCGN -0.28 0.48265606 10) (IWM -0.9 1.3383011 10) (MER -0.7 0.7508018 10) (DELL -0.53 0.51756924 10) (IBM -0.64 0.9412986 10) (ET -0.26999998 0.2892276 10) (EBAY -1.38 1.1716574 8) (DIA -0.65 0.71167386 5) (CSCO -0.35 0.52063775 5) (PMCS -0.42999998 0.64616877 4) (NT -0.22 0.27010044 3) (JNJ -0.42999998 0.46970314 3) (GS -1.25 1.2996379 3) (MO -0.34 0.5604123 3) (LUV -0.21 0.30833358 3) (TRAD -0.14 0.26685566 3) (IVGN -1.02 1.2453798 3) (MACR -0.29999998 0.49272728 2) (ORCL -0.19 0.22886491 2) (RFMD -0.17 0.3745882 2) (AMZN -1.29 1.235272 2) (MSFT -0.24 0.27343392 2) (SPY -0.96 0.79854697 2) (QQQ -0.64 0.41694745 2) (MWD -0.61 0.82731616 2) (PFE -0.28 0.4087835 1) (INTC -0.38 0.55482894 1) (MMM -0.82 1.0477368 1) (AMGN -0.84999996 0.85093194 1) (JDSU -0.08 0.15793625 1) (F -0.19999999 0.3006487 1) (JNPR -0.71999997 0.97768885 1))

**[Para 80]** "Factor Forecasts:"

**[Para 81]** ((\$OEX -3.76 3.9945574 10) (C 0.32 0.4668479 10) (JPM -0.53 0.38875616 10) (\$IXF 14.639999 45.875294 10) (\$OIX -2.87 2.9445841 10) (DNA -2.1399999 1.5705947 10) (AA 0.53 0.69572103 10) (HD 0.31 0.4644559 9) (\$PSE -8.51 8.228567 9) (CY -0.29999998 0.44947505 9) (\$TRIT -0.53999996 0.8132198 9) (\$XAU 2.3799999 2.0512803 9) (\$XMI -4.64 6.8969135 8) (MRK -0.35 0.6085382 8) (\$MOX -0.19 0.20609091 8) (\$VIX 0.68 0.9032603 8) (\$TYX 0.29 0.47938484 8) (\$IXCO -8.87 13.455776 8) (\$NDX 12.309999 17.681053 7) (KLAC -0.71999997 1.0593249 6) (\$SOX 7.7999997 9.652003 6) (HPQ -0.32 0.42573407 6) (\$RUT -5.0699997 6.683315 6) (\$SPX 4.7999997 7.992286 6) (\$RUI 2.59 4.2506285 6) (CAT -1.12 1.188255 6) (\$TRIN -0.57 0.6360811 5) (DD -0.41 0.49481577 5) (\$OFIN 32.07 41.15187 5) (\$MSH -6.89 6.6181483 4) (XOM -0.32999998 0.39069107 3) (AMD -0.44 0.43208045 3) (\$SXV 0.52 0.81607336 3) (NOK -0.26 0.5869697 1) (SCH 0.19999999 0.23420261 1) (\$OSX 1.4499999 1.5517198 1) (\$BKX 72.85 90.33106 1))

**[Para 82]** "TOP 10 Indicators [Operators] Used: "(" facilitation streak" . 6.207102) (" weird trader's formula" . 6.1357546) (" Standard Deviation of change" . 5.7111616) (" Joe predictor " . 5.4989996) ("last change" . 5.340061) (" Inside bar " . 5.141086) (" trend clock" . 4.8336005) (" Fidelity indicator " . 4.804117) (" decision tree advisor" . 4.5749583)("breakdirection" . 4.544185))

**[Para 83]** ("produced by STOCKO on " "4-7-2004" " at " "13:07:29")

**[Para 84]** "Ordered Trades (long and short):" ((SLR 0.19 0.21179391 10) (LUV -0.19 0.30853698 10)(AGRA 0.099999994 0.13536915 10) (PFE -0.28 0.41333914 10)(SPY -0.61 0.8041052 10) (ORCL 0.19 0.2306124 10) (GE -0.38 0.38960272 10)(BRCM 0.90999997 1.0485071 10) (IWM -0.97999996 1.3533683 10)(MER 0.78 0.7812779 10) (MSFT 0.13 0.27388412 6) (MWD 0.59 0.8717507 5)(DELL -0.5 0.51249754 5) (GM 0.53 0.70123565 5) (WMT -0.5 0.66404927 4)(ET 0.26999998 0.2928808 4) (MMM -0.96 1.0529734 4) (EBAY -1.31 1.1751109 4)(NVDA 0.45999998 0.59174836 3) (BAC -0.89 0.6596294 3) (RJR -0.41 0.7072696 3)(F -0.22999999 0.30107895 3)

(DIA -0.89 0.7142774 3)(LU -0.099999994 0.1251697 3) (JNJ 0.55 0.49980024 2)  
(RIMM -2.75 3.165225 2)(EK 0.32 0.53118646 2) (JDSU 0.099999994 0.15817225 2)  
(MO 0.47 0.56042403 2)(BBH 2.07 1.6064078 2) (DCGN -0.29 0.48465145 2)(AMGN -  
0.919999996 0.8673669 2) (CSCO -0.399999998 0.5225513 2)(GS -1.43 1.320251 2)  
(IBM -0.82 0.94496614 2) (PMCS 0.42 0.6556177 2)(AMZN 0.669999996 1.2345934 2)  
(QQQ -0.489999998 0.42357796 2)(AMTD -0.39 0.42330912 1) (EWJ -0.14 0.12833795  
1)(MACR 0.359999998 0.49486545 1) (TRAD -0.149999999 0.26868823 1) (RFMD 0.17  
0.3768703 1) (AMR -0.44 0.47739354 1) (NT 0.32 0.27017114 1)(IVGN -1.09  
1.2574277 1) (AXP -0.48 0.51102793 1) (INTC 0.31 0.5621757 1)(JNPR -0.669999996  
0.98081887 1) (EMC -0.29 0.28182745 1))

**[Para 85]** "Long Trades:" ((SLR 0.19 0.21179391 10) (AGRA 0.099999994  
0.13536915 10)(ORCL 0.19 0.2306124 10) (BRCM 0.909999997 1.0485071 10)(MER  
0.78 0.7812779 10) (MSFT 0.13 0.27388412 6) (MWD 0.59 0.8717507 5)(GM 0.53  
0.70123565 5) (ET 0.269999998 0.2928808 4)(NVDA 0.459999998 0.59174836 3) (JNJ  
0.55 0.49980024 2) (EK 0.32 0.53118646 2)(JDSU 0.099999994 0.15817225 2) (MO  
0.47 0.56042403 2) (BBH 2.07 1.6064078 2)(PMCS 0.42 0.6556177 2) (AMZN  
0.669999996 1.2345934 2)(MACR 0.359999998 0.49486545 1) (RFMD 0.17 0.3768703 1)  
(NT 0.32 0.27017114 1)(INTC 0.31 0.5621757 1))

**[Para 86]** "Short Trades:"

**[Para 87]** ((LUV -0.19 0.30853698 10) (PFE -0.28 0.41333914 10) (SPY -0.61  
0.8041052 10)(GE -0.38 0.38960272 10) (IWM -0.979999996 1.3533683 10)(DELL -0.5  
0.51249754 5) (WMT -0.5 0.66404927 4) (MMM -0.96 1.0529734 4)(EBAY -1.31  
1.1751109 4) (BAC -0.89 0.6596294 3) (RJR -0.41 0.7072696 3)(F -0.229999999  
0.30107895 3) (DIA -0.89 0.7142774 3)(LU -0.099999994 0.1251697 3) (RIMM -2.75  
3.165225 2)(DCGN -0.29 0.48465145 2) (AMGN -0.919999996 0.8673669 2)(CSCO -  
0.399999998 0.5225513 2) (GS -1.43 1.320251 2) (IBM -0.82 0.94496614 2)(QQQ -  
0.489999998 0.42357796 2) (AMTD -0.39 0.42330912 1)(EWJ -0.14 0.12833795 1)  
(TRAD -0.149999999 0.26868823 1)(AMR -0.44 0.47739354 1) (IVGN -1.09 1.2574277  
1) (AXP -0.48 0.51102793 1)(JNPR -0.669999996 0.98081887 1) (EMC -0.29  
0.28182745 1))

**[Para 88]** "Factor Forecasts:" ((\$XMI 8.45 6.9049716 10) (MRK 0.63 0.6133899 10)  
(DD 0.59 0.4952355 10) (XOM -0.399999998 0.38904682 10) (HD 0.29 0.46383718  
9)(\$TRIT -0.539999996 0.8132198 9) (\$SOX 6.73 9.768367 9) (\$OIX -2.93999998  
2.9371219 9) (\$IXCO -11.21 13.499422 9).3902399 8) (\$OEX -4.64 4.0137706 8)(C -  
0.56 0.47196028 7) (\$NDX 14.5199995 17.987043 6) (SCH 0.25 0.2570189 6)(\$VIX -  
1.05 0.90292054 6) (CAT -1.1 1.1917394 6) (KLAC 0.65 1.0778865 5)(\$MOX -0.24  
0.2085179 5) (CY -0.359999998 0.45430157 5)

**[Para 89]** (\$TRIN -0.57 0.6360811 5) (\$OSX 1.2099999 1.5498196 5) (\$RUT 6.46  
6.6895123 5) (AA -0.44 0.69583285 5) (DNA 1.5699999 1.5416151 4) (\$SPX 6.52  
8.037771 4) (\$BKX -7.17 90.327576 3) (\$IXF 18.1 45.865597 3) (\$OFIN 39.719997

41.6168 3) (\$XAU 2.11 2.0497785 3) (\$PSE 6.5099998 8.378838 2) (NOK -0.21 0.5868521 1) (AMD -0.5 0.43404773 1) (HPQ -0.32 0.42591795 1) (\$TYX 0.26999998 0.47935775 1) (\$SXV 0.71 0.8205991 1) (\$RUI -5.38 4.2748847 1))

**[Para 90]** "TOP 10 Indicators Used: " ((" Joe predictor " . 5.997999) (" Fidelity indicator " . 5.6082344) (" facilitation streak" . 5.4142036) (" range streak" . 5.3948317) (" positive reactivity" . 5.2547894) (" decision tree advisor" . 5.1499166) ("breakdirection" . 5.0883703) (" High-acceleration " . 5.0607243) ("surprise-oriented-adaptive-average" . 4.9888945) (" percent change " . 4.910804))

**[Para 91]** OUTPUT 3 ("STOCKO's Portfolio for: " "4-8-2004") ("produced by STOCKO on " "4-7-2004" " at " "12:36:53")

**[Para 92]** "Ordered Trades (long and short):" ((SLR 0.19 0.21190353 10) (LUV -0.19 0.30853957 10) (MWD 0.57 0.8713385 10)(IWM -1.02 1.354679 10) (BAC -0.9 0.65824246 10) (GS -1.28 1.3202591 10)(RIMM -2.75 3.161566 10) (SPY -0.61 0.8032505 10) (WMT -0.5 0.6613174 10)(ORCL 0.19 0.23045507 10) (GE 0.32 0.39145845 10) (NVDA 0.44 0.5913223 10)(BRCM 0.90999997 1.0487658 10) (MER 0.74 0.77939206 10)

**[Para 93]** (MSFT 0.12 0.27370524 6) (DELL -0.5 0.5123115 5) (DIA -0.89 0.7127619 5)(AGRA 0.099999994 0.13536915 5) (ET -0.25 0.29287294 4)(MO 0.59999996 0.5650037 4) (EBAY -1.42 1.1753953 3) (GM 0.48 0.69718236 3)(RJR -0.41 0.7080013 3) (LU -0.099999994 0.12542781 3) (EK 0.32 0.5311671 2)(AMZN 0.65 1.2342407 2) (F -0.22999999 0.30058587 2) (DCGN -0.29 0.4844996 2)

**[Para 94]** (AMTD -0.39 0.4228723 2) (IBM -0.82 0.9449853 2) (QQQ 0.35 0.42326385 2)(EWJ -0.14 0.12795976 2) (JNJ 0.55 0.49980024 2) (PFE -0.28 0.41356057 1)(MACR 0.35 0.4944977 1) (CSCO -0.39999998 0.52225125 1) (AXP 0.5 0.5113237 1)(MMM -0.98999995 1.0532387 1) (RFMD -0.14999999 0.37742677 1)(JDSU 0.099999994 0.15822525 1) (PMCS 0.48 0.6559136 1)(BBH 1.9599999 1.6009895 1) (AMR -0.44 0.47723442 1) (NT 0.32 0.27017114 1)(IVGN -1.15 1.2593709 1) (AMGN -1.0 0.86529934 1) (INTC 0.29 0.561249 1)(JNPR -0.66999996 0.9809189 1) (TRAD -0.13 0.2683633 1)(EMC -0.29 0.28194073 1))

**[Para 95]** SAMPLE OUTPUT 3

**[Para 96]** ("STOCKO's Portfolio for: " "4-8-2004")

**[Para 97]** ("produced by STOCKO on " "4-7-2004" " at " "13:07:29")

**[Para 98]** "Ordered Trades (long and short):"

**[Para 99]** ((SLR 0.19 0.21179391 10) (LUV -0.19 0.30853698 10) (AGRA 0.099999994 0.13536915 10) (PFE -0.28 0.41333914 10) (SPY -0.61 0.8041052 10) (ORCL 0.19 0.2306124 10) (GE -0.38 0.38960272 10) (BRCM 0.90999997 1.0485071 10) (IWM -0.97999996 1.3533683 10) (MER 0.78 0.7812779 10) (MSFT 0.13 0.27388412 6) (MWD 0.59 0.8717507 5) (DELL -0.5 0.51249754 5) (GM 0.53 0.70123565 5) (WMT -0.5 0.66404927 4) (ET 0.26999998 0.2928808 4) (MMM -0.96

1.0529734 4) (EBAY -1.31 1.1751109 4) (NVDA 0.45999998 0.59174836 3) (BAC -0.89 0.6596294 3) (RJR -0.41 0.7072696 3) (F -0.22999999 0.30107895 3) (DIA -0.89 0.7142774 3) (LU -0.099999994 0.1251697 3) (JNJ 0.55 0.49980024 2) (RIMM -2.75 3.165225 2) (EK 0.32 0.53118646 2) (JDSU 0.099999994 0.15817225 2) (MO 0.47 0.56042403 2) (BBH 2.07 1.6064078 2) (DCGN -0.29 0.48465145 2) (AMGN -0.91999996 0.8673669 2) (CSCO -0.39999998 0.5225513 2) (GS -1.43 1.320251 2) (IBM -0.82 0.94496614 2) (PMCS 0.42 0.6556177 2) (AMZN 0.66999996 1.2345934 2) (QQQ -0.48999998 0.42357796 2) (AMTD -0.39 0.42330912 1) (EWJ -0.14 0.12833795 1) (MACR 0.35999998 0.49486545 1) (TRAD -0.14999999 0.26868823 1) (RFMD 0.17 0.3768703 1) (AMR -0.44 0.47739354 1) (NT 0.32 0.27017114 1) (IVGN -1.09 1.2574277 1) (AXP -0.48 0.51102793 1) (INTC 0.31 0.5621757 1) (JNPR -0.66999996 0.98081887 1) (EMC -0.29 0.28182745 1))

**[Para 100]** "Long Trades:"

**[Para 101]** ((SLR 0.19 0.21179391 10) (AGRA 0.099999994 0.13536915 10) (ORCL 0.19 0.2306124 10) (BRCM 0.90999997 1.0485071 10) (MER 0.78 0.7812779 10) (MSFT 0.13 0.27388412 6) (MWD 0.59 0.8717507 5) (GM 0.53 0.70123565 5) (ET 0.26999998 0.2928808 4) (NVDA 0.45999998 0.59174836 3) (JNJ 0.55 0.49980024 2) (EK 0.32 0.53118646 2) (JDSU 0.099999994 0.15817225 2) (MO 0.47 0.56042403 2) (BBH 2.07 1.6064078 2) (PMCS 0.42 0.6556177 2) (AMZN 0.66999996 1.2345934 2) (MACR 0.35999998 0.49486545 1) (RFMD 0.17 0.3768703 1) (NT 0.32 0.27017114 1) (INTC 0.31 0.5621757 1))

**[Para 102]** "Short Trades:"

**[Para 103]** ((LUV -0.19 0.30853698 10) (PFE -0.28 0.41333914 10) (SPY -0.61 0.8041052 10) (GE -0.38 0.38960272 10) (IWM -0.97999996 1.3533683 10) (DELL -0.5 0.51249754 5) (WMT -0.5 0.66404927 4) (MMM -0.96 1.0529734 4) (EBAY -1.31 1.1751109 4) (BAC -0.89 0.6596294 3) (RJR -0.41 0.7072696 3) (F -0.22999999 0.30107895 3) (DIA -0.89 0.7142774 3) (LU -0.099999994 0.1251697 3) (RIMM -2.75 3.165225 2) (DCGN -0.29 0.48465145 2) (AMGN -0.91999996 0.8673669 2) (CSCO -0.39999998 0.5225513 2) (GS -1.43 1.320251 2) (IBM -0.82 0.94496614 2) (QQQ -0.48999998 0.42357796 2) (AMTD -0.39 0.42330912 1) (EWJ -0.14 0.12833795 1) (TRAD -0.14999999 0.26868823 1) (AMR -0.44 0.47739354 1) (IVGN -1.09 1.2574277 1) (AXP -0.48 0.51102793 1) (JNPR -0.66999996 0.98081887 1) (EMC -0.29 0.28182745 1))

**[Para 104]** "Factor Forecasts:"

**[Para 105]** ((\$XMI 8.45 6.9049716 10) (MRK 0.63 0.6133899 10) (DD 0.59 0.4952355 10) (XOM -0.39999998 0.38904682 10) (HD 0.29 0.46383718 9) (\$TRIT -0.53999996 0.8132198 9) (\$SOX 6.73 9.768367 9) (\$OIX -2.9399998 2.9371219 9) (\$IXCO -11.21 13.499422 9) (\$MSH 5.49 6.7244673 8) (JPM 0.48999998 0.3902399 8) (\$OEX -4.64 4.0137706 8) (C -0.56 0.47196028 7) (\$NDX 14.5199995 17.987043 6) (SCH 0.25 0.2570189 6) (\$VIX -1.05 0.90292054 6) (CAT -1.1 1.1917394 6) (KLAC

0.65 1.0778865 5) (\$MOX -0.24 0.2085179 5) (CY -0.35999998 0.45430157 5)  
(\$TRIN -0.57 0.6360811 5) (\$OSX 1.2099999 1.5498196 5) (\$RUT 6.46 6.6895123 5)  
(AA -0.44 0.69583285 5) (DNA 1.5699999 1.5416151 4) (\$SPX 6.52 8.037771 4)  
(\$BKX -7.17 90.327576 3) (\$IXF 18.1 45.865597 3) (\$OFIN 39.719997 41.6168 3)  
(\$XAU 2.11 2.0497785 3) (\$PSE 6.5099998 8.378838 2) (NOK -0.21 0.5868521 1)  
(AMD -0.5 0.43404773 1) (HPQ -0.32 0.42591795 1) (\$TYX 0.26999998 0.47935775  
1) (\$SXV 0.71 0.8205991 1) (\$RUI -5.38 4.2748847 1))

**[Para 106]** "TOP 10 Indicators Used: " ((" Joe predictor " . 5.997999) (" Fidelity indicator " . 5.6082344) (" facilitation streak" . 5.4142036) (" range streak" . 5.3948317) (" positive reactivity" . 5.2547894) (" decision tree advisor" . 5.1499166) ("breakdirection" . 5.0883703) (" High-acceleration " . 5.0607243) ("surprise-oriented-adaptive-average" . 4.9888945) (" percent change " . 4.910804))

**[Para 107]** In a first embodiment the invention uses a computer-implemented method for assisting in an equity trade in which a processor is executing instructions that perform the following acts: selecting from a group of mathematical operators to transform a set of arrays located in data storage; performing said mathematical operations of a set of arrays, such that preliminary data is produced; analyzing said preliminary data with a first set of Baesyan-logic functions, each with a corresponding adjustable weights; and determining a recommendation for the equity based on the above-described Baesyan logic analysis, and reporting the recommendation to a user as output; and comparing an actual result for the equity to the recommendation and adjusting at least one of the Bayesian logic functions or modules corresponding weights for any future recommendation (punishment/reward), and the invention includes setting an adjustable risk profile for an equity trade.

**[Para 108]** The adjustable risk profile system is detailed in FIGS. 9 and 10. In FIG. 9, the selection of the risk profile analysis is depicted in which a user can choose between pre-defined risk profiles and manually set ones. Of course, as can be appreciated by the those skilled in the art, different risk profiles can be set to account for different parameters or circumstances, which may be automatically provided or monitored by certain embodiments of the invention.

FIG. 10 is described above as well.

**[Para 109]** Optional features include where the content of the output further includes using actual dollar prices, the output includes forecasting a specific price movement for each stock, the output includes with direction of movement, magnitude of movement, and confidence of movement.

**[Para 110]** Other optional feature includes where the equity trade is not recommended unless said confidence level is above a user-specified target, the equity trade cannot be placed unless said confidence level is above a target level, or the confidence data is normalized, such that it is scaled from 1 to 10 as output. Other

optional features include a third-party trading system capable of performing rolling-stop losses.

**[Para 111]** In another embodiment, the invention uses a computer-implemented method for assisting in an equity trade in which a processor is executing instructions that perform the following acts: selecting from a group of mathematical operators to transform a set of arrays located in data storage; performing said mathematical operations of a set of arrays, such that preliminary data is produced; analyzing said preliminary data with a first set of Bayesian-logic functions, each with a corresponding adjustable weights; and determining a recommendation for said equity based on said Bayesian logic analysis, and reporting said recommendation to a user as output; and comparing an actual result for said equity to said recommendation and adjusting at least one of said Bayesian logic function corresponding weights for any future recommendation, wherein the invention includes using interest rate data for said stored data arrays.

**[Para 112]** In a third embodiment the invention uses a computer-implemented method for assisting in an equity trade in which a processor is executing instructions that perform the following acts: selecting from a group of mathematical operators to transform a set of arrays located in data storage; performing said mathematical operations of a set of arrays, such that preliminary data is produced; analyzing said preliminary data with a first set of Bayesian-logic functions, each with a corresponding adjustable weights; and determining a recommendation for said equity based on said Bayesian logic analysis, and reporting said recommendation to a user as output; and comparing an actual result for said equity to said recommendation and adjusting at least one of said Bayesian logic function corresponding weights for any future recommendation, wherein the invention includes setting an adjustable risk profile for at least one equity trader and publishing stop loss and take profit levels generated by executable instructions.

**[Para 113]** Other variations of the invention include where the output ranks multiple equities by confidence level, both on the buy side and on the sell side. The output includes with direction of movement, magnitude of movement, and confidence of movement. The equity trade is not recommended unless said confidence level is above a user-specified target; the equity trade cannot be placed unless said confidence level is above a target level, the confidence data is normalized, such that it appears scaled from 1 to 10 on said output.

**[Para 114]** The set of arrays include data relating to interest rates, and the set of arrays include data relating to foreign equity markets.